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Remarks

Claims 6 and 9-13 are pending in this application, all of which stand rejected under 35 USC § 103 as being unpatentable over various combinations of Nagashima et al ("Nagashima", US Patent No. 4608682) in view of Lim et al ("Lim", US Patent No. 6026108) and Yoshida et al (US Patent No. 6104477). Claim 6 has been amended by this amendment to more clearly define the present invention.

Rejection Under 35 U.S.C. 103(a)

Claims 6 and 9 are rejected under 35 USC § 103 as being unpatentable over Nagashima in view of Lim.

As the Examiner recognises, Nagashima does not disclose the use of a feedback arrangement in combination with a laser as the optical buffer device. Nagashima does disclose a feedback loop in a circuit with a different type of optical buffer, namely an optical directional coupler.

The present invention as claimed by claim 6 thus is novel over the disclosure of Nagashima.

The Examiner cites Lim as disclosing a feedback arrangement involving a semiconductor laser, and argues that, consequently, a skilled person faced with Nagashima and with Lim, would modify Nagashima to arrive at the present invention as claimed in claim 6.

Applicant respectfully disagrees with this analysis.

The Examiner suggests that because Lim discloses the idea of feedback to compensate for environmental changes undergone by a laser, it would be obvious to a skilled person to add this feature to the laser version of Nagashima's switching system, presumably also with the aim of compensating for environmental changes.

However, on the face of it, Nagashima's bistable laser device would already appear to operate adequately in the form described in Nagashima. Thus it is submitted that a skilled person would not be motivated to modify it.

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Furthermore, it is submitted that Nagashima's laser embodiment is inherently robust because it is operated as a bistable device. Any slight change in the environmental conditions will not lead to the bistable laser changing state such that an incorrect reading results. Thus, the type of adjustment disclosed in Lim would not be needed and would not provide a useful advantage if it were to be combined with Nagashima's laser-based system.

In any case, it is apparent that Nagashima is well aware of the use of feedback because use is made of it in connection with the optical directional coupler version of Nagashima's switching system, and yet Nagashima does not suggest such a combination with the embodiment using bistable lasers.

As there is no suggestion in Nagashima of applying this additional complication to the bistable laser version of its switching system, despite itself disclosing it in combination with another type of optical device, why would a skilled person be motivated to modify it based on the teaching of Nagashima in combination with that of Lim? Such a modification would seemingly lead to additional complications for no apparent real advantage. It might even be argued that Nagashima's disclosure teaches *against* the use of a feedback loop in combination with a bistable laser, given that it is included in the optical directional coupler embodiment.

In view of the foregoing, it is believed that it is not proper to combine the teachings of Nagashima and Lim, and that accordingly, claim 6 is patentable as the rejection based on that combination is moot.

Furthermore, claim 6 has been amended to specify that continuous adjustment of said current control signal is provided. Basis for this amendment may be found, for example, at page 2, line 31 to page 3, line 3 of the present specification. This amendment further emphasizes the distinction between the operating regime of the present invention and the bistable operation of the laser embodiment of Nagashima. Thus even if, for the sake of argument, the feedback arrangement of Lim were to be incorporated in to the laser embodiment of Nagashima, it still would not result in the present invention.

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Thus, Applicants believe that claim 6 is patentable. The other pending claims 9-13 are directly or indirectly dependent on allowable claim 6, and for this reason at least are also patentable.

The Examiner's comments regarding the Declaration have been noted, particularly the point that the operating points A and B shown in Figure 3b are merely exemplary. Applicants agree with this, but would respectfully suggest that the bistable nature of the operation of Nagashima also must impose limitations on how the device is operated, i.e. where A and B are located on the diagram.

As set out in the Declaration, the operating regime in the present invention is different to the bistable approach adopted by Nagashima. For example, see page 2, line 31 to page 3, line 3 of the present specification: "Additionally, in order to be sure that the optical gain process and the optical absorption process within the semiconductor laser element outweigh one another, the value of the injection current to the semiconductor laser can be *continuously* adjusted by using a feedback control system" (emphasis added.) Thus, the injection current is (i) kept unchanged if the gain is equal to absorption, or (ii) increased if gain is less than absorption, or (iii) decreased if gain is greater than absorption. The laser does not remain in a stable state; its operation is inherently unstable as it varies between these three possibilities.

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BEST AVAILABLE COPY**Conclusion**

It is respectfully submitted that the Office Action's rejections have been overcome and that this application is now in condition for allowance. Reconsideration and allowance are, therefore, respectfully solicited.

If, however, the Examiner still believes that there are unresolved issues, he is invited to call applicant's attorney so that arrangements may be made to discuss and resolve any such issues.

In the event that an extension of time is required for this amendment to be considered timely, and a petition therefor does not otherwise accompany this amendment, any necessary extension of time is hereby petitioned for, and the Commissioner is authorized to charge the appropriate cost of such petition to the **Lucent Technologies Deposit Account No. 12-2325**.

Respectfully,

By


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